This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently Amended) A method of processing traffic received from an InfiniBand node via a first queue pair, comprising:

selecting a traffic entry in an InfiniBand receive queue, wherein said traffic entry comprises one of:

a Send command comprising an encapsulated communication;

a Send command comprising ~~an RDMA~~ a remote direct memory access (RDMA) Read descriptor; and

an RDMA Read response comprising a response to an RDMA Read request;

if said selected traffic entry comprises a Send command comprising an RDMA Read descriptor:

issuing a first RDMA Read request to retrieve one or more portions of a communication described by said RDMA Read descriptor;

in a linked list corresponding to the first queue pair, adding an entry corresponding to said first RDMA Read request, said entry comprising a first sequence number corresponding to a first expected response to said first RDMA Read request and a last sequence number corresponding to a last expected response to said first Read request, ~~that~~ ~~identify a range of sequence numbers associated with expected responses~~ ~~to said first RDMA Read request~~ and optionally comprising a sequence number of the most recently received response or a link to the next entry ~~entry of~~ in the linked list; and

2

23   in a retry queue, adding an entry corresponding to said first RDMA

24   Read request; and

25   if said selected traffic entry comprises an RDMA Read response to said

26 first RDMA Read request:

27   identifying a sequence number associated with said RDMA Read

28   response;

29   comparing said sequence number to said range of sequence

30   numbers;

31   storing said one or more portions of said described communication

32   to facilitate assembly of said described communication in said queue; and

33   if said sequence number matches a final sequence number in said

34   range, retiring in said retry queue said entry corresponding to said first

35   RDMA Read request.

1   2.   (Original) The method of claim 1, further comprising:

2   forwarding a communication associated with said selected traffic entry,

3 for transmission on an external communication link, wherein said communication

4 is one of:

5   said encapsulated communication; and

6   said described communication, after said described communication

7   is assembled.

1   3.   (Original) The method of claim 1, further comprising, if said

2 selected traffic entry comprises an RDMA Read response to said first RDMA

3 Read request:

4   if said sequence number does not match said final sequence number,

5 updating said entry in said linked list to include said sequence number.

1   4.   (Original) The method of claim 1, further comprising:

2   maintaining a single memory structure comprising multiple linked list,

3 including said linked list;

4   wherein each linked list stores entries associated with RDMA Read

5 requests for a different InfiniBand queue pair.

1   5.   (Original) The method of claim 1, further comprising:

2   maintaining a single memory structure for queuing InfiniBand traffic

3 received via multiple virtual lanes and multiple queue pairs, said single memory

4 structure comprising said queue.

1   6.   (Original) The method of claim 5, wherein said queue comprises a

2 linked list of memory buffers within said single memory structure.

1   7.   (Original) The method of claim 1, further comprising:

2   maintaining a head pointer configured to identify a head of said linked list;

3 and

4   maintaining a tail pointer configured to identify a tail of said linked list.

1   8.   (Previously Presented) The method of claim 1, further comprising:

2   maintaining a head pointer configured to identify a head of said queue;

3   maintaining a tail pointer configured to identify a tail of said queue; and

4   maintaining a next traffic entry pointer configured to identify a next entry

5 in said queue to be processed.

1   9.   (Original) The method of claim 8, wherein said tail pointer is

2 configured to identify where in said queue a next traffic entry is to be queued.

1   10.   (Original) The method of claim 1, further comprising, if said

2 selected traffic entry comprises an RDMA Read descriptor:

4

3   appending space to a head of said queue;

4   wherein said described communication is assembled in said appended

5 space.

1   11.   (Original) The method of claim 1, further comprising, if said

2 selected traffic entry comprises an RDMA Read response to said first RDMA

3 Read request:

4   dropping an RDMA Read response received out of order; and

5   requesting a retry of said first RDMA Read request.

1   12.   (Currently Amended) A computer readable medium storing

2 instructions that, when executed by a computer, cause the computer to perform a

3 method of processing traffic received from an InfiniBand node via a first queue

4 pair, the method comprising:

5   selecting a traffic entry in an InfiniBand receive queue, wherein said

6 traffic entry comprises one of:

7   a Send command comprising an encapsulated communication;

8   a Send command comprising an RDMA Read descriptor; and

9   an RDMA Read response comprising a response to an RDMA

10   Read request;

11   if said selected traffic entry comprises a Send command comprising an

12 RDMA Read descriptor:

13   issuing a first RDMA Read request to retrieve one or more

14   portions of a communication described by said RDMA Read descriptor;

15   in a linked list corresponding to the first queue pair, adding an

16   entry corresponding to said first RDMA Read request, said entry

17   comprising a first sequence number corresponding to a first expected

18   response to said first RDMA Read request and a last sequence number

19   corresponding to a last expected response numbers that identify a range of

20   ~~sequence numbers associated with expected responses~~ to said first RDMA

21   Read request, and optionally comprising a sequence number of the most

22   recently received response or a link to the next entry ~~entry of~~ in the linked

23   list ; and

24   in a retry queue, adding an entry corresponding to said first RDMA

25   Read request; and

26   if said selected traffic entry comprises an RDMA Read response to said

27   first RDMA Read request:

28   identifying a sequence number associated with said RDMA Read

29   response;

30   comparing said sequence number to said range of sequence

31   numbers;

32   storing said one or more portions of said described communication

33   to facilitate assembly of said described communication in said queue; and

34   if said sequence number matches a final sequence number in said

35   range, retiring in said retry queue said entry corresponding to said first

36   RDMA Read request.

1   13.   (Currently Amended) A method of tracking responses to an

2   RDMA Read operation, the method comprising:

3   issuing an RDMA Read on a first communication connection;

4   identifying a range of sequence numbers to be associated with responses

5   to the RDMA Read;

6   adding an entry to a first linked list corresponding to the first

7   communication connection, said entry comprising:

8   a first sequence number corresponding to a first expected response

9   to the RDMA Read and a last sequence number corresponding to a last

10   expected response to the RDMA Read~~numbers that identify said range of~~

11   ~~sequence numbers;~~

6

12   a latest sequence number received in said range of sequence

13   numbers;

14   optionally a link to the next entry ~~entry of~~ in the linked list;

15   receiving a first RDMA Read response;

16   determining whether a first sequence number associated with the first

17   RDMA Read response matches a last sequence number in said range of sequence

18   numbers; and

19   if said first sequence number does not match said last sequence number,

20   updating said latest sequence number to match said first sequence number.

1   14.   (Original) The method of claim 13, further comprising:

2   if said first sequence number matches said last sequence number, retiring

3   an entry in a retry queue corresponding to the RDMA Read.

1   15.   (Original) The method of claim 13, wherein the first

2   communication connection is an InfiniBand queue pair.

1   16.   (Original) The method of claim 15, wherein:

2   said issuing is performed by an InfiniBand transmit module; and

3   said adding, said determining and said updating are performed by an

4   InfiniBand receive module;

5   the method further comprising:

6   at the InfiniBand transmit module, retrying the RDMA Read if an RDMA

7   Read response associated with said range of sequence numbers is received out of

8   order.

1   17.   (Original) The method of claim 15, wherein:

2   said issuing is performed by an InfiniBand transmit module; and

3   said adding, said determining and said updating are performed by an

7

4 InfiniBand receive module;

5 the method further comprising, at the InfiniBand transmit module:

6   maintaining a retry queue for tracking RDMA Reads that have not

7 yet completed; and

8   retiring an entry in said retry queue corresponding to the RDMA

9 Read if RDMA Read responses corresponding to said range of sequence

10 numbers are received in order.

1 18. (Original) The method of claim 17, further comprising, at the

2 InfiniBand transmit module:

3 retrying the RDMA Read if RDMA Read responses corresponding to one

4 or more of said range of sequence numbers are received out of order.

1 19. (Original) The method of claim 13, wherein said identifying

2 comprises:

3 dividing an amount of data to be received in response to the RDMA Read

4 by a maximum transfer unit in effect for the first communication connection.

1 20. (Original) The method of claim 13, further comprising:

2 maintaining a single memory structure comprising multiple linked lists

3 corresponding to multiple communication connections, including said first linked

4 list corresponding to the first communication connection.

1 21. (Original) The method of claim 20, further comprising:

2 for each of the multiple communication connections, including the first

3 communication connection, maintaining pointers to the first entry and the last

4 entry in the corresponding linked list.

1 22. (Currently Amended) An apparatus for queuing multiple types of

2   receive traffic in a communication interface, comprising:

3   a queue for queuing multiple types of receive traffic associated with

4   communications to be transmitted from the communication interface;

5   a head pointer configured to identify a head of said queue;

6   a tail pointer configured to identify a tail of said queue, wherein said

7   traffic commands are enqueued at said tail;

8   a next entry pointer configured to identify a next entry in said queue to be

9   processed; and

10   a linked list, wherein each entry in said linked list corresponds to an

11 RDMA Read request issued by the communication interface, and is configured to

12 identify a range of sequence numbers associated with expected responses to the

13 RDMA Read request, wherein the range of sequence numbers are identified by a

14 first sequence number corresponding to a first expected response to the RDMA

15 Read request and a last sequence number corresponding to a last expected

16 responses to the RDMA Read request.

1   23. (Original) The apparatus of claim 22, wherein each entry said

2   linked list is further configured to identify a sequence number of a most recently

3   received response to the RDMA Read request.

1   24. (Original) The apparatus of claim 22, wherein the linked list is one

2   of multiple linked lists, each said linked list corresponding to a separate

3   InfiniBand queue pair.

1   25. (Original) The apparatus of claim 22, further comprising:

2   a retry queue, wherein a retry entry is added to said retry queue for each

3   RDMA Read request issued by the communication interface;

4   wherein a first retry entry in said retry queue corresponding to a first

5   RDMA Read request is retired when said expected responses to the first RDMA

6   Read request are received.

1   26.   (Original) The apparatus of claim 22, further comprising:
2   a memory configured to store pointers to a first entry and a last entry in
3   said linked list.

1   27.   (Original) The apparatus of claim 22, wherein said queue
2   comprises an assembly area for assembling a communication associated with a
3   first type of receive traffic.

1   28.   (Original) The apparatus of claim 27, wherein said assembly area
2   comprises a portion of said queue delimited by said head pointer and said next
3   entry pointer.

1   29.   (Original) The apparatus of claim 27, wherein said first type of
2   receive traffic is an InfiniBand RDMA Read command comprising a set of
3   RDMA read descriptors configured to identify the communication associated with
4   said first type of receive traffic.

1   30.   (Original) The apparatus of claim 29, wherein a second type of
2   receive traffic is an InfiniBand Send command configured to encapsulate the
3   communication associated with said second type of receive traffic command.

1   31.   (Original) The apparatus of claim 27, wherein:
2   said first type of receive traffic comprises a set of descriptors, wherein
3   each said descriptor is configured to describe a portion of the communication
4   associated with said first type of receive traffic; and
5   the apparatus is configured to issue read requests to retrieve the portions
6   of the communication described by the set of descriptors and assemble said

10

7   portions in said assembly area.

1   32.   (Original) The apparatus of claim 22, further comprising:
2   a transmit module configured to transmit the communications associated
3   with said receive traffic;
4   wherein each communication associated with receive traffic is forwarded
5   from said queue to said transmit module after the communication is determined to
6   be complete.

1   33.   (Original) The apparatus of claim 32, wherein a communication is
2   forwarded from said queue to said transmit module by passing to the transmit
3   module a set of pointers delimiting the communication within said queue.

1   34.   (Original) The apparatus of claim 22, wherein said queue
2   comprises a linked list of buffers within a memory structure configured to queue
3   receive traffic for multiple communication connections.

1   35.   (Currently Amended) A communication interface for tracking
2   responses to an InfiniBand RDMA Read request, comprising:
3   for each of one or more active InfiniBand queue pairs, a corresponding
4   linked list, wherein each entry in said linked list is configured to include:
5   a first sequence number corresponding to a first expected response
6   and a last sequence numbers that identify a range of sequence numbers
7   associated with expected responses to an RDMA Read request issued on
8   the corresponding queue pair by the communication interface and a last
9   sequence number corresponding to a last expected response to the RDMA
10   Read request;
11   a previous sequence number, wherein said previous sequence
12   number is a sequence number associated with a most recently received

11

13   response to the RDMA Read request; and

14   optionally a link to the next entry of in said linked list; and

15   for each of the linked lists, pointers to a first entry and a last entry in said

16   linked list.

1   36.   (Original) The communication interface of claim 35, further

2   comprising:

3   a retry queue configured to queue retry entries corresponding to RDMA

4   Read requests issued by the communication interface;

5   wherein an retry entry in said retry queue is retired when a final response

6   to a corresponding RDMA Read request is received, said final response being

7   identified by a final sequence number in said range of sequence numbers.

1   37.   (Original) The communication interface of claim 35, further

2   comprising:

3   a transmit module configured to:

4   issue a first RDMA Read request on a first queue pair; and

5   calculate said range of sequence numbers associated with said

6   expected responses to the first RDMA Read request; and

7   a receive module configured to add an entry, corresponding to the first

8   RDMA Read request, to said corresponding first linked list.

1   38.   (Original) The communication interface of claim 37, wherein said

2   receive module is further configured to:

3   determine a sequence number of a response to the first RDMA Read

4   request; and

5   determine if said sequence number matches a final sequence number in

6   said range of sequence numbers associated with expected responses to the first

7   RDMA Read request.

1   39.   (Original) The communication interface of claim 38, wherein said

2 receive module is further configured to:

3   determine if said sequence number is out of order.